Small Business Innovation Research/Small Business Tech Transfer

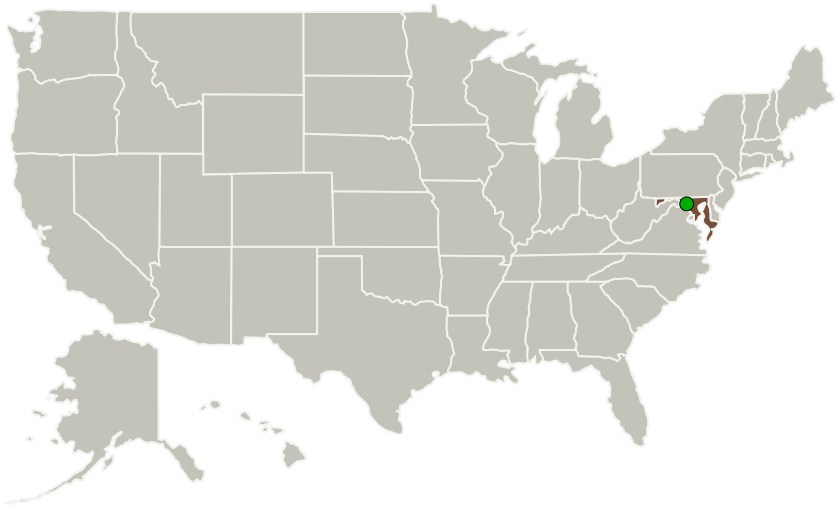
Low-Frequency, All Digital Radar (ADR) for Biomass and Ice-sheet Investigations, Phase I

Completed Technology Project (2014 - 2014)

Project Introduction

Low-Frequency, All Digital Radar (ADR) can be a key component for NASA Phased-array and tomographic Radar systems spanning multiple earth-science measurement objectives. One of the key attractions of ADR is hardware re-use for different scenarios. Intelligent Automation Inc. (IAI) proposes the design of an ADR system to meet the technology requirements listed in this solicitation. State-of-the-art technologies in the design of data conversion devices like Analog-to-Digital Converters (ADC), Digital-to-Analog Converters (DAC), Direct Digital Synthesizers (DDS) and reconfigurable logic devices like Field Programmable Gate Arrays (FPGA) MMIC make it possible to realize the concept of ADR with low SWaP and low-cost goals. The proposed ADR will build upon IAI's Software Defined Radio/ Radar (SDR) design expertise. Our proposed approach is modular, scalable and meets the NASA goals of multi-channel, coherent altimeters along the cross track to obtain high resolution in the cross track direction.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Intelligent Automation, Inc.	Lead Organization	Industry	Rockville, Maryland
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Low-Frequency, All Digital Radar (ADR) for Biomass and Ice-sheet Investigations Project Image

Table of Contents

Low-Frequency, All Digital Radar (ADR) for Biomass and Ice-sheet Investigations, Phase I

Completed Technology Project (2014 - 2014)

Primary U.S. Work Locations

Maryland

Project Transitions

June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137444)*

Images

Project Image
Low-Frequency, All Digital Radar (ADR) for Biomass and Ice-sheet Investigations Project Image *(https://techport.nasa.gov/image/130853)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Intelligent Automation, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

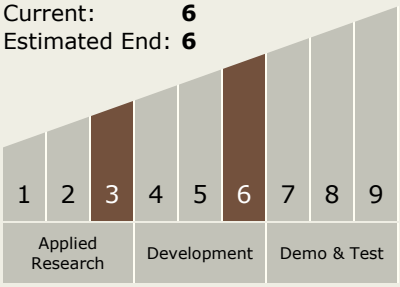
Carlos Torrez

Principal Investigator:

Arvind Bhat

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



Low-Frequency, All Digital Radar (ADR) for Biomass and Ice-sheet Investigations, Phase I

Completed Technology Project (2014 - 2014)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System